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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
MYERS, PAUL W	

ART UNIT	PAPER NUMBER
2612	4

DATE MAILED: 03/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/476,910	MIHARA, TAKASHI	
	Examiner	Art Unit	
	Paul W Myers	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,18,24,26 and 28* is/are rejected.

7)☒ Claim(s) *15-17, 19-23, 25, 27 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 January 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. Claims 1, 4-6, 8, 9, 11 and 17 are objected to because of the following informalities:

a. In regard to claims 1, 4-6, 8, 9 and 17 the word point is incorrectly spelled as pint.

b. In regard to claim 11, pg 67 line 22 the word "and" should be "or", and line 26 the word "the" should be "a".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

c. In regard to claim 24, the phrase "influence of chromatic aberration is adopted" is recited. It is unclear what this phrase means. It is also unclear what feature of the invention that the limitation "is adopted".

d. In regard to claim 26, the phrase "influence of a color shift in air is used" is recited. It is unclear what this phrase means. It is also unclear what feature of the invention that the limitation "is used".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claim 1-14, 18 and 28 is rejected under 35 U.S.C. 102(b) as being clearly anticipated by JP 09-181966 to Toyoda Tetsuya. (All references are made to the enclosed translation)

e. In regard to claims 1 and 5, Toyoda in Solution details that his image processing system uses parallax lenses to input image information and determine the distance distribution of the object group (i.e. an image input unit for capturing image information including distance information to each portion of an object to be photographed). Toyoda in paragraph [0024] details that there is a menu in which several f-numbers can be input

(i.e. a parameter input unit (i.e. menu) for inputting a parameter (i.e. f-number) for which the effective aperture and focal length of the assumed image sensing optical system can be derived)

Toyoda in paragraph [0025] details that there are two methods of distance setup which sets the focus location (i.e. an in-focal point position designation unit for designating an in-focal point position of the assumed image sensing optical system.).

Toyoda in paragraph [0036] details that a point spread function is used to determine how light spreads according to focus. Toyoda further details that dotage is added by choosing a suitable matrix. Toyoda further details that the matrix is set up by the parameter setup and the distance to the subject. Toyoda further details that there are four possible parameters, the focal distance of the lens" (i.e. focal length), the f-number, the focus distance (i.e. in-focal position) and the photographic subject distance (i.e. distance to object). Toyoda in paragraph [0039] details that each element of the matrix is computed from the PSF of the lens and value changes with each parameter inputted. (i.e. has a blur state calculation unit for calculating a blur state from the distance information input by said image input unit, the in-focal point position designated by said in-focal point position designation unit). Toyoda in the Solution details that an optical fog (i.e. blur effect) that is different from the actual image pickup lenses is provided to the object group depending on the calculated distance of the object group and the out-of-state parameter. (i.e. has an image processing unit for applying the blur effect to the image input by said image input unit in correspondence with the blur state calculated by said blur state calculation unit).

f. In regard to claim 2 and 7, Toyoda in paragraph [0023] and figure 7(a) shows that there are four different ranges (i.e. portions) A-D that the image processing can take place. Toyoda further shows that A has far distance information. Toyoda in the Solution details that an optical fog (i.e. blur effect) is provided to the object group depending on the calculated distance (i.e. overwrite sequentially from an image portion having far distance information. For further details refer to examiner's notes for claim 1.

g. In regard to claim 3, Toyoda in paragraph [0023] and figure 7(a) shows that there are four different ranges (i.e. portions) A-D that the image processing can take place. The user can select portion D to perform processing (i.e. an image processing unit having a first operation mode of applying the blur effect to only part of the image input by said image input unit). Toyoda further details that If a user makes modification and the decision of a processing range, a "setting item" menu will be displayed again (i.e. a different range can be selected) The user can select the remaining portions (i.e. a second mode of applying the blur effect to a remaining image portion; and a switching unit capable of externally switching an operation mode of said image processing unit from the first operation mode to the second operation mode. Toyoda in figure 3 shows a display (200) (i.e. a display unit capable of displaying an image blurred by said image processing unit). For further details refer to examiner's notes for claims 1 and 2.

h. In regard to claim 4 and 6, Toyoda details finding the blur (i.e. the shape and the amount of blurring) based on a Point Spread Function which uses the distance information, the in-focal point, and the parameter input. The Point Spread Function is the optical system function describing the relationship between the input to the optical system and the two-dimensional light intensity that is output from the optical system. Toyoda details finding the blur and the in-focal point (i.e. the circle of least confusion). Therefore the examiner considers the finding the blur based on the Point Spread Function and determining the confusion circle as equivalent process. For further details refer to examiner's notes for claims 1 and 5.

i. In regard to claim 8, Toyoda in paragraph [0012] details that the invention has a storage section that has a control function which controls each part, memorizes parameters required for the image-processing function (i.e. computer-readable storage and program). For further details refer to examiners notes for claims 1 and 5.

j. In regard to claim 9, Toyoda in paragraph [0012] details that the invention has a storage section that has a control function which controls each part, memorizes parameters required for the image-processing function (i.e. computer-readable storage and program). For further details refer to examiner's notes for claims 4 and 6.

k. In regard to claim 10, Toyoda in paragraph [0012] details that the invention has a storage section that has a control function which controls each part, memorizes

parameters required for the image-processing function (i.e. computer-readable storage and program). For further details refer to examiner's notes for claims 8 and 10.

l. In regard to claim 11, Toyoda in Solution details that his image processing system uses parallax lenses to input image information and determine the distance distribution of the object group (i.e. means for inputting image data including depth information). Toyoda in figure 6 shows a menu in which the focal length can be set (i.e. a means for setting a parameter for expressing a lens characteristic). Toyoda further shows that the f-number can be set. Toyoda in paragraph [0025] details that there are two methods of distance setup which sets the focus location (i.e. means for setting a distance for adjusting a focus). Toyoda in paragraph [0036] details that a point spread function is used to determine how light spreads according to focus. Toyoda further details that dotage is added by choosing a suitable matrix. Toyoda further details that the matrix is set up by the parameter setup and the distance to the subject. Toyoda further details that there are four possible parameters, the focal distance of the lens" (i.e. focal length), the f-number, the focus distance (i.e. in-focal position) and the photographic subject distance (i.e. distance to object). (i.e. means for calculating expression of an image texture including a blur from a virtual setting values and the depth information of the image). Toyoda in paragraph [0012] details that the invention has a storage section that has a control function which controls each part, memorizes parameters required for the image-processing function (i.e. means for storing a calculation result in memory).

m. In regard to claim 12 and 28, Toyoda in Solution details that his image processing system uses parallax lenses to input image information (i.e. means for inputting and image) and determine the distance (i.e. having depth information) distribution of the object group (i.e. in units of pixels of a two-dimensional image).

n. In regard to claim 13, refer to examiner's notes for claims 11 and 12.

o. In regard to claim 14, Toyoda details finding the blur (i.e. the shape and the amount of blurring) based on a Point Spread Function. The Point Spread Function is the optical system function describing the relationship between the input to the optical system and the two-dimensional light intensity that is output from the optical system. It is well known that light intensity through a lens system will form a concaved or convex pattern. Since the point spread function describes this pattern, the point spread function can be either a concaved or convex function. For further details refer to examiner's notes for claim 11.

p. In regard to claim 18, Toyoda in paragraph [0024] details that there is a menu in which several f-numbers can be input. Toyoda in paragraph [0023] and figure 7(a) shows that there are four different ranges (zoom ratios) A-D that the image processing can take place.

5. Claim 2, 7 and 10 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by US006252997B1 to Miura et al.

q. In regard to claim 2, 7 and 10 Miriua in column 3 details that his invention gathers distance to from the object to the camera (i.e. an image input unit for capturing image information including distance information to each portion of an object to be photographed). Miura in column 2 lines 25-28 details that his invention has a digital computer capable of expressing sense of distance with more reality by blurring of the image. (i.e. an image processing unit for applying the blur effect to the image input by image input unit) Miura in column 5 lines 16-36 details that his invention uses a low pass filter to blur the image. Miura further details that the distance information is determined related to number of dots. Miura in column 5 lines 3-8 details that the amount of blurring is determined by the number of dots (i.e. applying the blur effect to the image input by said image input unit by overwriting sequentially from an image portion having far distance information).

Allowable Subject Matter

6. Claim 15-17, 19-27 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. Claims 24 and 26 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

r. US006295392B1 to Gregory et al for using PSF to find confusion circle.

s. US00RE38307E to Gustafsson et al for Blur described by blur function.

t. US005438366A to Jackson et al for a description of a confusion circle and blur filter.

u. US006498624B1 to Ogura et al for in-focus state detection.

v. US005511155A to Yamaguchi for synthesizing objects in focus.

w. US 5,754,899 to Taniguchi et al for a camera with circle of confusion, effective aperture, focal length and in-focus state detection.

x. US005193124A to Subbarao for image range finding.

y. U.S. 4,344,707 to Massie for a point spread function, a concave function and a convex function.

z. US005864430A Dickey et al for a point spread function, a concave function and a convex function.

aa. Reconstruction with Noise Data: An Approach Via Eigenvalue Optimization, Siam J. Optim, 1998 Society for Industrial and Applied Mathematics Vol. 8, No. 1, pp. 82-104, February 1998 for a point spread function, a concave function and a convex function.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul W Myers whose telephone number is (703) 305 4039. The examiner can normally be reached on Mon-Fri 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (703) 305 4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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